Report of Results: MVA5394

Analysis of Settled Dust Northern California Youth Correctional Center

Prepared for:

State of California
Dept of General Services
Seismic & Special Programs
707 West 3rd St.
West Sacramento, CA 95605

Respectfully Submitted by:

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29 August 2007



## Report of Results: MVA5394

## **Analysis of Settled Dust - Northern California Youth Correctional Center**

#### Introduction

On 1 August 2007, we received five settled dust samples from Clark Sief Clark, reportedly collected from the Northern California Youth Correctional Center, 7650 S. Newcastle, Stockton, California. We were asked to determine the asbestos levels in the dust and possible sources for the asbestos. Upon receipt, the samples were assigned MVA Scientific Consultants laboratory identification numbers as follows:

Sample ID	Sample Description	MVA Number
37VA	Hospital Electrical Rm Transformer-	
	Top Surface	S0939
38VA	Hospital Hallway @ pharmacy return air plenum-	
	Top of light case	S0940
39VA	Auditorium-Stage-OHC Table surface	S0941
<b>4</b> 0VA	Administration-OHC-Hallway-GIC office	
	-ceiling hatch surface	S0942
41VA	Administration-OHC-Hallway-Janitor's closet	
	-ceiling hatch surface	S0943

All analyses were carried out in our laboratory during the period 1 August through 27 August 2007.

#### Methods

The samples were analyzed according to ASTM Method D5755-03 using either a Philips model EM420 or a Philips model CM120 transmission electron microscope (TEM), equipped with an Oxford INCA energy dispersive x-ray spectrometer (EDS). Additional analyses for dust constituents that may serve as source indicators were also conducted by TEM/EDS.

#### **Results and Discussion**

The results of analysis for these samples are presented in Table 1. The Appendix contains a summary of the analytical results, the laboratory count sheets, and images and EDS spectra of typical asbestos fibers found in these samples. Also contained in the appendix are images and spectra showing vermiculite associated with chrysotile fibers and other asbestiform amphibole minerals typical of those known as "Libby



amphibole" and observed as contaminants in vermiculite from the Libby, Montana vermiculite mine operated by W.R. Grace.

## Conclusions

Dust analyzed in this study contains elevated levels of chrysotile asbestos. Portions of the dust are consistent with derivation from a chrysotile/vermiculite bearing fireproofing. Asbestiform amphibole consistent with "Libby amphibole" was also found, indicating that the vermiculite in this dust originated at least in part at W.R. Grace's Libby vermiculite mine.

Table 1. Asbestos Concentration in Settled Dust Samples

Sample ID	MVA Number	Asbestos Str/cm <sup>2</sup>
37VA	S0939	14,513,778
38VA	S0940	502,400
39VA	S0941	None Detected
40VA	S0942	<8,373
41VA	S0943	19.538

MEALTH & SAFETY - ENGINEE

# Chain of Custody-TEM Micro-Vacuum

Requested TAT (Circle One) Same Day One Day (24hr) Normal (48hr)
Analysis Type (Circle One) Air Surface Bulk Water

115

A Claim # Section # Section # Section # of Samples に Date(s) Taken に Page # Section Pages の Total Pages の	Project Name & Location: Cathernic Youth Corrections (Cont S. Tat New Castle	Highlight Sample Location  Sant Flow Rate Start Time Total Total Type of Transcriptions of Transcripti	MNW HAT 7.31,07 Foreward By (Print & Sign)  ANW HAT 7.31,07 Foreward By (Print & Sign)  Bate & Time  Analysis Date & Time  Analysis Date & Time
CSC Project #	NOWHWY C 7650S.1 540CRAM	Sampling Area and/or Building #: Sample # Date  27 LA  37 LA  40 LA  41 LA  41 LA  41 LA  42 LA  43 LA  44	Refinquished By Print & Sign)  Melinquished By (Print & Sign)

Clark Seif Clark- 21732 Devonshire Street, 2nd Floor, Chatsworth, CA 91311, Ph (818) 727-2553, Fax (818) 727-2556 www.csceng.com

# **APPENDIX**



37.VA

## **ASTM D5755 Results**

**MVA 5394** 

By:

MVA#:

W.Hill

Client project number:

Str/cm = No Str. X CFA X Total Vol.

Grid Op. X GO Area X Vol Filt X Area Sampled

Client #:

Str.#	CFA	#GO	Area GO	Vol Filt ml	Total Vol.	Area Samp.	
52	1256	5	0.009	0.1	100	100	
Anal. Sen	ıs =	279111.111	Str/CM2	LOD =3* Anal. Sens =		837333.333	
Total =		14513777.778	Str/CM2				
MVA#:	S0940	Client #:	38.VA				
Str.#	CFA	#GO	Area GO	Vol Filt ml	Total Vol.	Area Samp.	
36	1256	10	0.009	1	100	100	
Anal. Sens =		13955.556	Str/CM2	LOD =3* Anal. Sens =		41866.667	
Total =		502400.000	Str/CM2				
MVA#:	S0941	Client #:	39.VA				
Str.#	CFA	#GO	Area GO	Vol Filt ml	Total Vol.	Area Samp.	
0	1256	10	0.009	5	100	100	
Anal. Sen	is =	2791.111	Str/CM2	LOD =3* Ar	nal. Sens =	8373.333	
Total =		0.000	Str/CM2				
MVA#:	S0942	Client #:	40.VA				
Str. #	CFA	#GO	Area GO	Vol Filt ml	Total Vol.	Area Samp.	
3	1256	10	0.009	5	100	100	

MVA #:	S0943	Client #:	41.VA			
Str. #	CFA	#GO	Area GO	Vol Filt ml	Total Vol.	Area Samp.
7	7 1256	10	0.009	5	100	100
Anal Sens =		2791 111	Str/CM2	1 OD =3* A	nal Sens =	8373 333

Str/CM2

Str/CM2 LOD =3\* Anal. Sens =

**Total =** 19537.778 Str/CM2

2791.111

8373.333

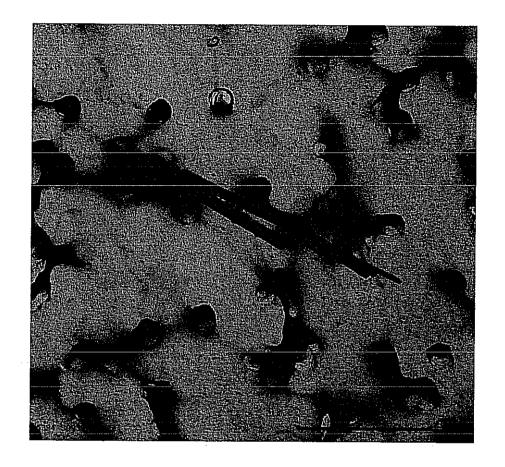
Anal. Sens =

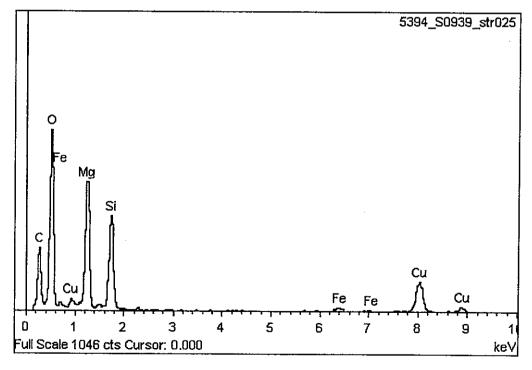
Total =



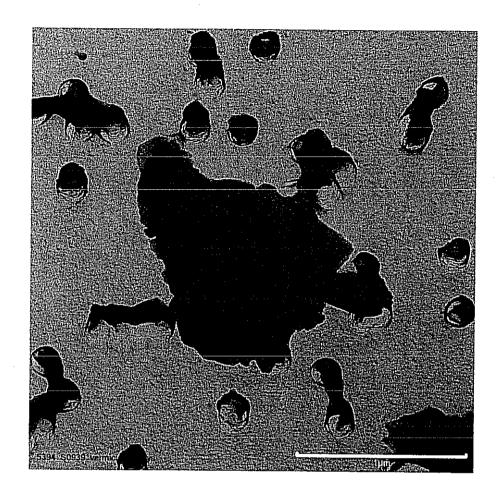
8373.333

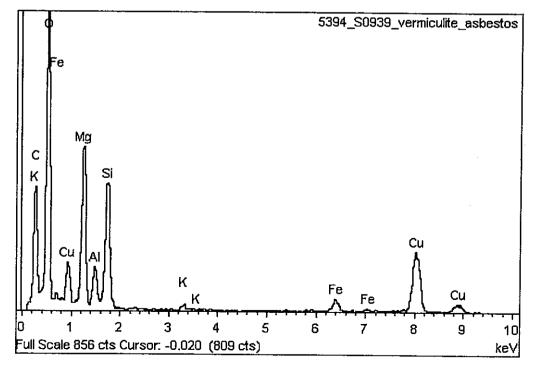
<sup>\*</sup>According to ASTM D6620



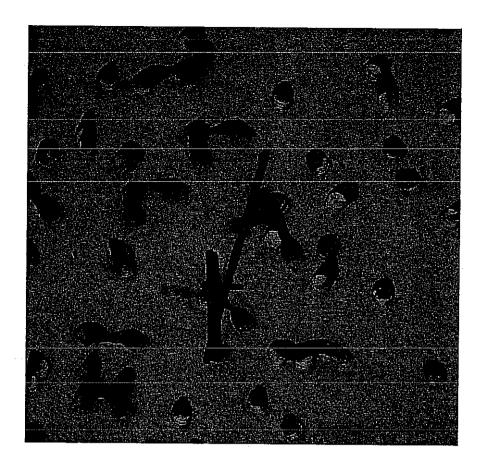


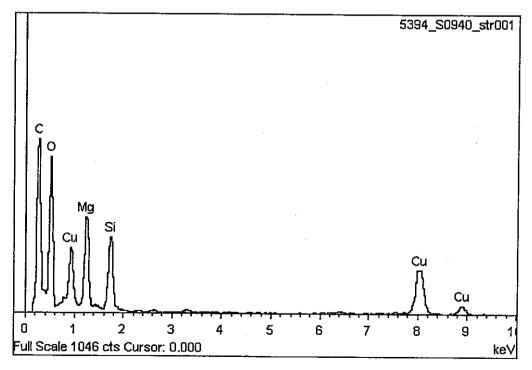




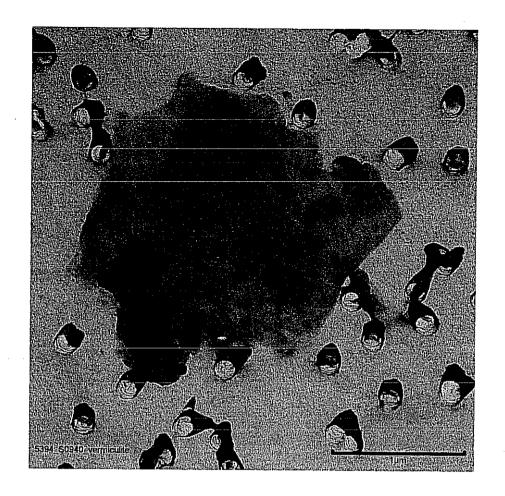


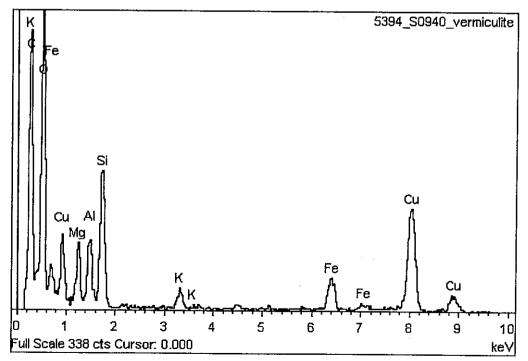




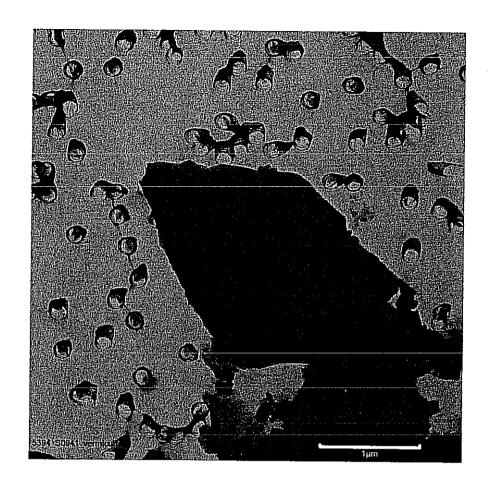


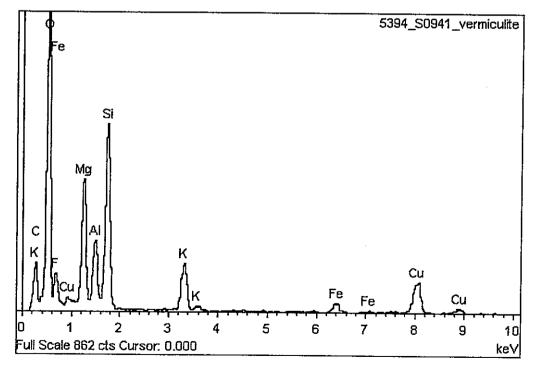




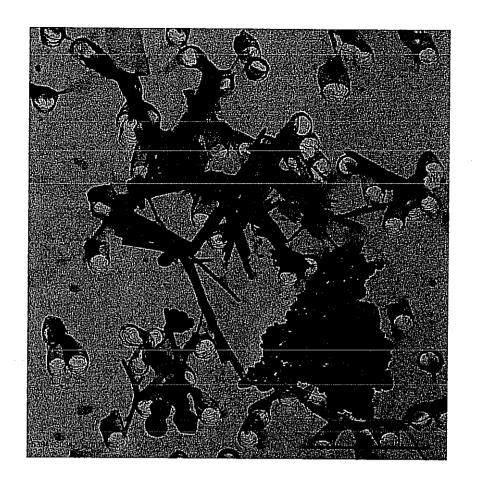


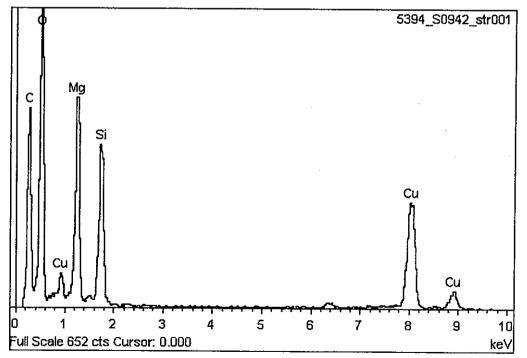






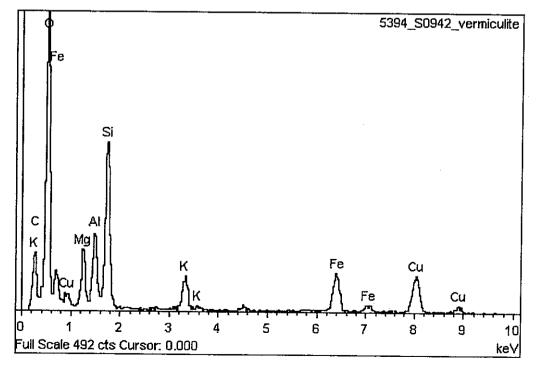




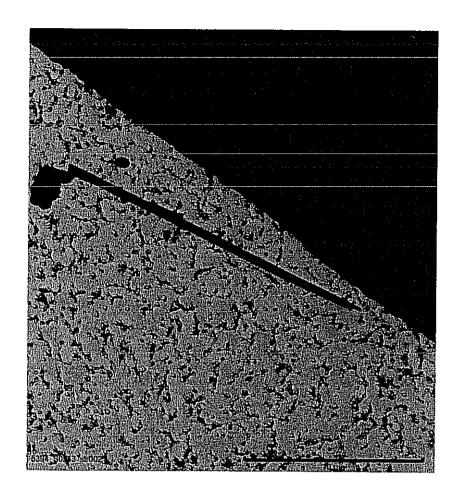


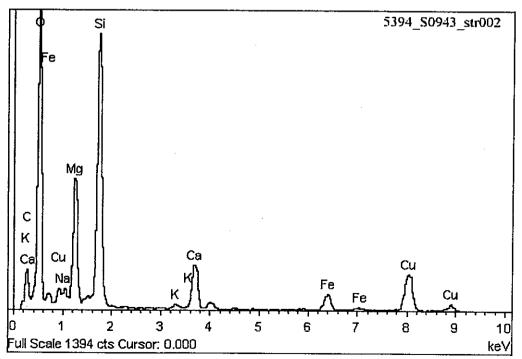




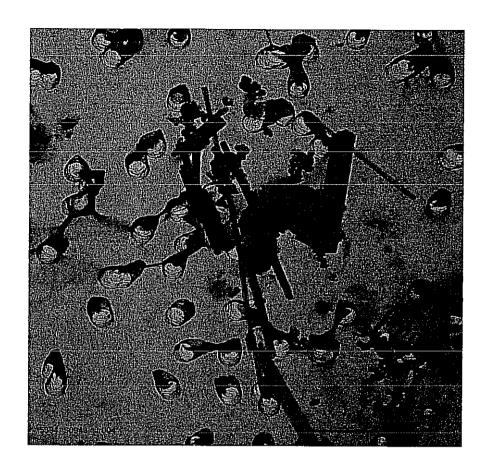


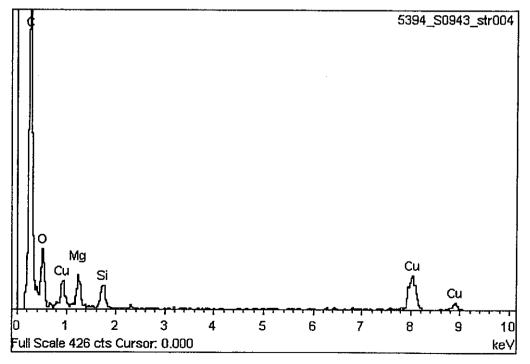




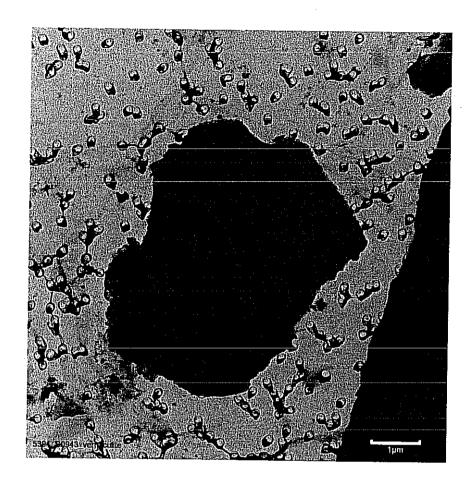


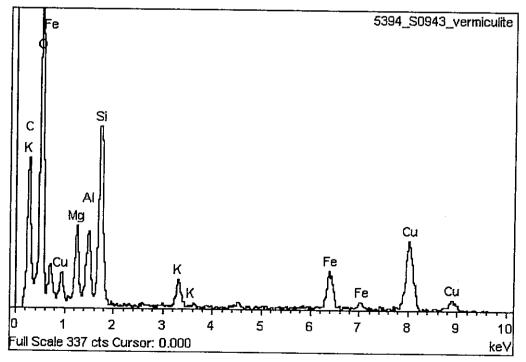














# Case 01-01139-AMC scientific consultants Page 17 of 23

### Surface Dust Sample Analysis Sheet

				-
MVA Project#	5394	Amt Collected(cm <sup>2</sup> ):	100	Analyst: WH
MVA Sample#	S0939	Amt Prepped(cm <sup>2</sup> ):	0.1	Date: 8/27/2007
Client I.D.:	37VA	Filter Area (mm²):	1256	Page: 1 of 2
Instrument: P	hilips 120	Filter Type:	PC	Comments: 0.1 ml
Magnification:	24,000	Openings Analyzed:	5	ASTM Method: D6480
Acc. Voltage:	100	Grid Opening (mm²):	0.009	or D5755 X

		Structure	Structure	Length**	Width**				1 11-000	
Grid	Opening	Number*	Туре	(cm)	(cm)	SAED	EDS	Comments	Length*** (µm)	Width*** (µm)
1	B7	1	В	· 26	0.3	С			10.8	0.13
		2	F	7.0	0.1	С			2.9	0.04
		3	·F	11.5	0.1	С			4.8	0.04
		4	F	7.0	0.15	С			2.9	0.06
		5	F	11.5	0.1	С			4.8	0.04
		6	F	4.0	0.1	С			1.7	0.04
		7	В	3.5	0.5	С	-		1.5	0.21
		8	F	7.0	0.1	С			2.9	0.04
	·	9	F	9.5	0.1	C			4.0	0.04
		10	F	5.5	0.1	С			2.3	0.04
	-	11	F_	6.5	0.2	С			2.7	0.08
	:	12	В	5.0	0.5	С			2.1	0.21
	C9	13	F	10.1	0.1	С			4.2	0.04
		14	F	2.3	0.1	С			1.0	0.04
		15	F	17.0	0.1	С			7.1	0.04
		16	F	5.4	0.1	С			2.3	0.04
		. 17	F	5.4	0.1	C			2.3	0.04
		18	F	4.5	0.1	Ċ			1.9	0.04
		19	С	5.5	1.5	_ _			2.3	0.63
		20	F	2.1	0.1	С			0.9	0.04
		21	В	9.0	1	С			3.8	0.42
		22	F	19.0	0.15	С			7.9	0.06
	E8 ·	23	F	9.0	0.1	С			3.8	0.04
		24	В	3.5	0.15	С			1.5	0.06
		25	В	5.5	0.5	С	С	РНОТО	2.3	0.21
		26	F	6.0	0.1	С			2.5	0.04
		- 27	F	2.5	0.1	С			1.0	0.04
		28	F	16.0	0.1	С	•		6.7	0.04
		29	В	3.0	0.5	С			1.3	0.21
		30	F	5.5	0.1	С			2.3	0.04
	<u> </u>	31	F	36.0	0.1	С			15.0	0.04
		32	F	5.5	0.1	С			2.3	0.04
		33	В	41.0	0.4	С			17.1	0.17
		34	F	27.0	0.1	С			11.3	0.04
	H7	35	F	36.0	0.1	С			15.0	0.04

<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

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Surface Dust Sample Analysis Sheet

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MVA Project#_	5394	Amt Collected(cm <sup>2</sup> ):	100	Analyst: \	ΛH		
MVA Sample#_	S0939	Amt Prepped(cm²):	0.1	<del></del>	8/27/200	7	
Client I.D.:_	37VA	Filter Area (mm²):	1256	Page:	2 of 2	·	,
Instrument: I	Philips 120	Filter Type:	PC	Comments: (			
Magnification:	24,000	Openings Analyzed:	5	ASTM Method: I		-	
Acc. Voltage:_	100	Grid Opening (mm²):	0.009	or [	D5755	X	

Grid	Орепіпд	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAËD	Enc		Length***	Width***
1	H7	36	F	3.5	0.1	C	EDS	Comments -	(µm)	(µm)
		37	F	3.0	0.1	С	<del> </del>		1.5	0.04
<del></del> -		38	F	3.0	<del>                                     </del>		<del> </del>		1.3	0.04
		39	F		0.1	С			1.3	0.04
ļ			F	2.2	0.1	C		t.	0.9	0.04
<del></del>		40		31.0	0.1	C	ļ		12.9	0.04
		41	F	2.9	0.1	C		<u> </u>	1.2	0.04
ļ		42	F	3.0	0.1	С			1.3	0.04
<u> </u>		43	F	2.0	0.1	С			8.0	0.04
	15	44	F	3.0	0.1	С			1.3	0.04
<u> </u>		45	F	2.0	0.1	С			0.8	0.04
ļ		46	F	1.9	0.1	С			8.0	0.04
		47	F	3.7	0.4	С			1.5	0.17
		48	С	8.0	5.5	С			3.3	2.29
		49	F	4.0	0.1	С			1.7	0.04
		50	F	6.0	0.1	C			2:5	0.04
		51	F	5.5	0.1	С		_	2.3	0.04
		52	F	5.6	0.1	C			2.3	0.04
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<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

## Case 01-01139-MV/CsciEppnHz@ChSulFilnHs10/16/07 Page 19 of 23

Surface Dust Sample Analysis Sheet

ed(cm²): 100 Ar	nalyst: WH
ed(cm²): 1	Date: 8/27/2007
a (mm²): 1256 F	Page: 1 of 2
er Type: PC Comm	ments: 1 ml
- · · · · · · · · · · · · · · · · · · ·	ethod: D6480
g (mm²): 0.009	or D5755 X
t	red(cm²): 1 rea (mm²): 1256   I ter Type: PC   Comr radiyzed: 10   ASTM M

Grid	Opening	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAED	EDS	Comments	Length***	Width***
1	B4	1	F	4	0.1	C	C	Comments	(µm)	(µm)
<del> </del>		2	F	2.0	<del></del>		<u> </u>	PHOTO	1.7	0.04
	D1	3	В		0.1	C			8.0	0.04
	וטו	4	<u> </u>	8.0	1.5	С			3.3	0.63
			<del></del>	7.0	0.25	С	·		2.9	0.10
-	E4	. 5	M	2.5	0.15	С			1.0	0.06
	7.10	6	F	7.5	0.2	С			3.1	0.08
<b></b>	H2_	7	M	3.1	0.1	С			1.3	0.04
<u> </u>		8	F	5.0	0.1	С			2.1	0.04
·	-	9	В	4.5	0.5	С			1.9	0.21
		10	F	2.1	0.15	С			0.9	0.06
		11	F	21.0	0.1	С			8.8	0.04
		12	В	81.0	1.5	С			33.8	0.63
		13	F	4.6	0.1	С			1.9	0.04
	14	14	M	5.5	0.1	С			2.3	0.04
		15	F	4.5	0.1	С			1.9	0.04
		16	F ·	6.0	0.1	C			2.5	0.04
		17	М	7.0	0.1	C			2.9	0.04
2	C3	18	F	2.5	0.1	С			1.0	0.04
		19	F	6.0	0.1	С			2.5	0.04
		20	F	2.0	0.1	С			0.8	0.04
		21	F	4.5	0.1	С			1.9	0.04
	D1	22	F	1.8	0.1	С			0.8	0.04
		23	F	2.0	0.1	С			0.8	0.04
	E7	24	В	9.5	0.3	С	· · · · · · · · · · · · · · · · · · ·		4.0	0.13
		25	В	2.2	0.2	С	С		0.9	0.08
		26	F	5.0	0.1	C			2.1	0.04
		27	F	6.0	0.1	C			2.5	0.04
		28	С	5.0	1	c			2.1	0.42
	F9	29	М	5.5	0.5	c			2.3	0.42
		30	F	2.9	0.15	C			1.2	
		31	М	3.5	0.1	c			1.5	0.06
	H8	32	F	6.0	0.1	C		<u> </u>		0.04
	110	33	F	3.5	0.1	c			2.5	0.04
	·	34	C	7.0				`	1.5	0.04
<del>                                     </del>			F		1.5	C	<del></del>		2.9	0.63
L		35	<u> </u>	5.4	0.1	С			2.3	0.04

<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

## Case 01-01139-MMCscl2nfiltiCO7dnSulfilnds10/16/07 Page 20 of 23

Surface Dust Sample Analysis Sheet

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MVA Project#	5394	Amt Collected(cm <sup>2</sup> ):	100	Analyst:	WH		,
MVA Sample#	S0940	Amt Prepped(cm²):	1	<del></del>	8/27/200	7	
Client I.D.:	38VA	Filter Area (mm²):	1256	— Page:	2 of 2	•	
Instrument: Pl	nilips 120	Filter Type:	PC	Comments:			
Magnification:	24,000	Openings Analyzed:	10	ASTM Method:			<del></del>
Acc. Voltage:	100	Grid Opening (mm²):	0.009		D5755	X	

Grid	Opening	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAED	EDS	Comments	Length*** (μm)	Width*** (µm)
2	H8	36	F	4.5	0.1	С			1.9	0.04
										0.07
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<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

## Case 01-01139-MMCsclengificO74nsulFiled 10/16/07 Page 21 of 23

Surface Dust Sample Analysis Sheet

riidiyota enect	•
Amt Collected(cm²): 100	Analyst: WH
Amt Prepped(cm²): 5	Date: 8/27/2007
Filter Area (mm²): 1256	Page: 1 of 1
Filter Type: PC	Comments: 5.0 ml
Openings Analyzed: 10	ASTM Method: D6480
Grid Opening (mm²): 0.009	or D5755 X
	Amt Collected(cm²):       100         Amt Prepped(cm²):       5         Filter Area (mm²):       1256         Filter Type:       PC         Openings Analyzed:       10

Grid	Opening	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAED	EDS	Comments	Length*** (µm)	Width*** (µm)
1	<b>G</b> 7	NSD			T T			Comments	(pin)	(hin)
	H3	NSD					<del>                                     </del>			
	D5	NSD					<u> </u>			
	C2	NSD				1			<del>                                     </del>	ļ <u>.</u>
	A1	NSD				1			<del>                                     </del>	
2	l2	NSD							<u> </u>	
	H4	NSD			-		<del>                                     </del>			
	G1	NSD								
	G8	NSD								<u> </u>
	E7	NSD								
		·								
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<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

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# MVA SCIENTIFIC CONSULTANTS Surface Dust Sample Analysis Sheet

		· · · · · · · · · · · · · · · · · · ·		,00			
MVA Project#_	5394	Amt Collected(cm <sup>2</sup> ):	100	Analyst:	WH		
MVA Sample#_	S0942	Amt Prepped(cm <sup>2</sup> ):	5	<del></del>	8/27/200	)7	
Client I.D.:	40VA	Filter Area (mm²):	1256	- <del></del> Page:	1 of 1		_
Instrument: P	hilips 120	Filter Type:	PC	Comments:			
Magnification:	24,000	Openings Analyzed:	10	ASTM Method:			
Acc. Voitage:	100	Grid Opening (mm²):	0.009	or	D5755	X	

Grid	Opening	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAED	EDS	Comments	Length*** (µm)	Width*** (µm)
1	B2	NSD		Ţ <u></u>				Oommenia	(μπ)	(μπ)
	C8	NSD			·   · · · · · · · · · · · · · · · · · ·	<del>                                     </del>			<u> </u>	
	D3	NSD			<del> </del>	<del>                                     </del>				<u> </u>
	F1	1	С	5.5	4	С	С	PHOTO	2.3	1.67
2	B4	NSD	<del> </del>		<u> </u>			111010	2.3	1.07
	C6	2	F	2.9	0.25	C.		·	1.2	0.10
	· F8	NSD				<del>                                     </del>			1.2	0.10
	12	NSD							<u> </u>	
-	J5	3	М	1.9	0.1	С	-		0.8	0.04
										0.04
	·				† · · · · · · · · · · · · · · · · · · ·		·			
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<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

Structure Type: B = Bundle, C = Cluster, F = Fiber, M = Matrix

SAED: C = Chrysotile, A = Amphibole

<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)

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**Surface Dust Sample Analysis Sheet** 

MVA Project#_	5394	Amt Collected(cm <sup>2</sup> ):	100	Analyst: WH	
MVA Sample#_	S0943	Amt Prepped(cm <sup>2</sup> ):	5 ml	Date: 8/27/2007	_
Client I.D.:	41VA	Filter Area (mm²):	1256	Page: 1 of 1	_
Instrument: F	hilips 120	Filter Type:	PC	Comments: 5 ml	_
Magnification:	24,000	Openings Analyzed:	10	ASTM Method: D6480	_
Acc. Voltage:	100	Grid Opening (mm²):	0.009	or D5755 X	_

				_				<b>-</b>		
Grid	Opening	Structure Number*	Structure Type	Length** (cm)	Width** (cm)	SAED	EDS	Comments	Length*** (µm)	Width***
1	НЗ	1	M	6.0	0.1	С	T	Confinence	2.5	(µm)
<u> </u>	G6	NSD		0.0	0.1	-			2.5	0.04
	E8	NSD	<u> </u>		<u> </u>					
-	C7			40.0	<del>                                     </del>	<u> </u>	4.0		4	
		2	F	42.0	1	A	AO	Amphibole (other)	17.5	0.42
	A8	3	F	3.5	0.1	С	ļ		1.5	0.04
2	12	NSD			<u></u>	ļ	ļ			
<u> </u>	G3	NSD		<u> </u>			<u> </u>			
	E7	4	С	7.0	1	C.	С	PHOTO	2.9	0.42
		5	F	2.5	0.1	С			1.0	0.04
		6	F	2.1	0.15	С			0.9	0.06
		7	F	5.5	0.1	С			2.3	0.04
<u> </u>	C6	NSD								
	B1	NSD								
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<sup>\*</sup>NFD or NSD = No Fibers Detected or No Structures Detected

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<sup>\*\*</sup> On Screen Measurement

<sup>\*\*\*</sup> Calculated Actual Measurement (On Screen Measurement X 10,000/Magnification)